

# Sensors with analog output

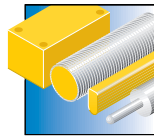


Inductive sensors with analog output provide a current, voltage or frequency signal and are ideally suited for simple control tasks. They are used in many applications, requiring more than just simple digital position indication. Typical applications are for example tension control, winding/unwinding motion or separation of parts according to size and material.

## Features

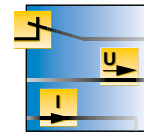
- High repeatability
- Large measuring ranges
- Current, voltage and frequency output
- Optionally adjustable switching output
- Many different designs
- Excellent EMC protection
- Short-circuit and reverse-polarity protection
- All connection types

## Properties



### Designs

Compact rectangular, threaded and smooth barrels as well as ring shaped versions



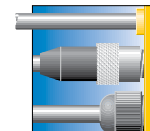
### Electrical versions

0...10 V or 0...20 mA, 3/4-wire; 4...20 mA 2-wire intrinsically safe



### Measuring ranges

High-precision 0.1...1.5 mm, large range 10...50 mm, ring sensors Ø 20, 50, 100 mm



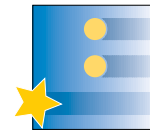
### Electrical connections

Cable, connector or terminal chamber



### Materials

Rugged and chemical-resistant plastic and metal housings for all types of applications



### Special features

Sensors for metal detection; ATEX approved versions



### Internet link

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## EH6.5 – 2 outputs 0...10 V – Metal distinction



<b>General data</b>			
<b>Connection</b>	0.2 m male, M12 x 1	<b>Operating voltage</b>	15...30 VDC
<b>Housing material</b>	V2A (1.4301)	<b>Ambient temperature</b>	-25...+70 °C
<b>Dimensions</b>	Ø 6.5 x 41.6 mm	<b>Measuring accuracy</b>	< 1 % of full scale

### Types and data – selection table

Type	w	d
BI1,5-EH6,5-0,2-Q20-2LU-H1141/S950	w051	d337

## Q20 – 2 outputs 0...10 V – Metal distinction



<b>General data</b>			
<b>Connection</b>	male, M12 x 1	<b>Operating voltage</b>	15...30 VDC
<b>Housing material</b>	PBT	<b>Ambient temperature</b>	-25...+70 °C
<b>Dimensions</b>	40 x 20 x 68 mm	<b>Measuring accuracy</b>	< 1 % of full scale

### Types and data – selection table

Type	w	d
BI15-Q20-2LU-H1141/S950	w051	d338

### Q80 – 2 outputs 0...10 V – Metal distinction



**General data**

<b>Inside ring diameter D</b>	50 mm
<b>Operating voltage</b>	15...30 VDC
<b>Ambient temperature</b>	-25...+70 °C
<b>Measuring accuracy</b>	<1 % of full scale

<b>Connection</b>	male, M12 x 1
<b>Housing material</b>	PBT
<b>Dimensions</b>	80 x 40 x 92 mm

**Types and data – selection table**

Type	w	d
BI50R-Q80-2LU-H1141/S950	w051	d339

### S32XL – 2 outputs 0...10 V – Metal distinction



**General data**

<b>Inside ring diameter D</b>	100 mm
<b>Operating voltage</b>	15...30 VDC
<b>Ambient temperature</b>	-25...+70 °C
<b>Measuring accuracy</b>	<1 % of full scale

<b>Connection</b>	male, M12 x 1
<b>Housing material</b>	POM
<b>Dimensions</b>	137.5 x 32 x 180 mm

**Types and data – selection table**

Type	w	d
NI100R-S32XL-2LU-H1141/S950	w051	d340

## Q08 – Output 0...10 V and 0...20 mA

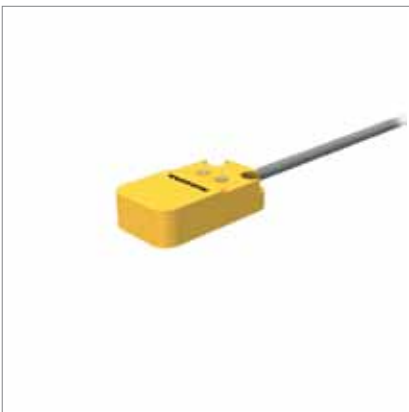


<b>General data</b>			
<b>Linearity deviation</b>	5 % of full scale	<b>Measuring range</b>	1...4 mm
<b>Connection</b>	2 m cable	<b>Operating voltage</b>	15...30 VDC
<b>Switching distance</b>		<b>Housing material</b>	GD-Zn
<b>Ambient temperature</b>	-25 °C	<b>Dimensions</b>	20 x 8 x 32 mm
<b>Repeatability</b>	1 % of measuring range  A - B		

### Types and data – selection table

Type			
BI7-Q08-LIU		w052	d341

## Q14 – Output 0...10 V and 0...20 mA



<b>General data</b>			
<b>Linearity deviation</b>	3 % of full scale	<b>Measuring range</b>	3...8 mm
<b>Operating voltage</b>	15...30 VDC	<b>Switching distance</b>	
<b>Housing material</b>	PBT	<b>Ambient temperature</b>	-25...+70 °C
<b>Dimensions</b>	30 x 14 x 52 mm	<b>Repeatability</b>	1 % of measuring range  A - B

### Types and data – selection table

Type	Connection		
BI10-Q14-LIU-V1141	male, M8 x 1	w053	d342
BI10-Q14-LIU	2 m cable	w052	d343

## Q14 – Ring sensor – Output 0...10 V



**General data**

<b>Inside ring diameter D</b>	20.1 mm	<b>Operating voltage</b>	15...30 VDC
<b>Output</b>	Analog output, 0...10 V	<b>Housing material</b>	PBT
<b>Ambient temperature</b>	-25...+70 °C	<b>Repeatability</b>	1 % of measuring range  A - B

**Types and data – selection table**

Type	Connection	Dimensions	w	d
BI20R-Q14-LU-H1141	male, M12 x 1	30 x 14 x 62.5 mm	w038	d309
BI20R-Q14-LU	2 m cable	30 x 14 x 52 mm	w054	d344

## Q20 – Output 0...10 V and 0...20 mA



**General data**

<b>Linearity deviation</b>	3 % of full scale	<b>Measuring range</b>	4...11 mm
<b>Operating voltage</b>	15...30 VDC	<b>Switching distance</b>	
<b>Housing material</b>	PBT	<b>Ambient temperature</b>	-25...+70 °C
<b>Dimensions</b>	40 x 20 x 68 mm	<b>Repeatability</b>	1 % of measuring range  A - B

**Types and data – selection table**

Type	Connection	w	d
BI15-Q20-LIU-H1141	male, M12 x 1	w053	d338
BI15-Q20-LIU	2 m cable	w052	d345

## CK40 – Output 0...10 V and 0...20 mA



<b>General data</b>			
<b>Connection</b>	male, M12 x 1	<b>Operating voltage</b>	15...30 VDC
<b>Housing material</b>	PBT	<b>Ambient temperature</b>	-25...+70 °C
<b>Dimensions</b>	40 x 40 x 65 mm	<b>Repeatability</b>	1 % of measuring range  A - B

Variable orientation of active face in 5 directions

### Types and data – selection table

Type	Linearity deviation	Measuring range	Switching distance	w	d
BI15-CK40-LIU-H1141	3 % of full scale	4...11 mm		w053	d346
NI25-CK40-LIU-H1141	5 % of full scale	5...25 mm		w053	d346

## CP40 – Output 0...10 V and 0...20 mA



<b>General data</b>			
<b>Connection</b>	Terminal chamber	<b>Operating voltage</b>	15...30 VDC
<b>Housing material</b>	PBT	<b>Ambient temperature</b>	-25...+70 °C
<b>Dimensions</b>	40 x 40 x 114 mm	<b>Repeatability</b>	1 % of measuring range  A - B

Variable orientation of active face in 9 directions

### Types and data – selection table

Type	Linearity deviation	Measuring range	Switching distance	w	d
BI15-CP40-LIU	3 % of full scale	4...11 mm		w055	d347
NI25-CP40-LIU	5 % of full scale	5...25 mm		w055	d347

## Q80 – Output 0...10 V and 0...20 mA



**General data**

<b>Linearity deviation</b>	5 % of full scale	<b>Measuring range</b>	10...50 mm
<b>Connection</b>	male, M12 x 1	<b>Operating voltage</b>	15...30 VDC
<b>Switching distance</b>		<b>Housing material</b>	PBT
<b>Ambient temperature</b>	-25...+70 °C	<b>Dimensions</b>	80 x 40 x 92 mm
<b>Repeatability</b>	1 % of measuring range  A - B		

Types and data – selection table

Type			
NI50-Q80-LIU-H1141		w053	d348

## M8 – Voltage output 0...10 V



**General data**

<b>Linearity deviation</b>	3 % of full scale	<b>Measuring range</b>	0.25...1.25 mm
<b>Operating voltage</b>	15...30 VDC	<b>Switching distance</b>	
<b>Housing material</b>	V4A (1.4404)	<b>Ambient temperature</b>	-25...+70 °C
<b>Repeatability</b>	1 % of measuring range  A - B		

Types and data – selection table

Type	Connection	Dimensions		
BI1,5-EG08-LU-H1341	male, M12 x 1	∅ 8 x 57 mm	w038	d142
BI1,5-EG08-LU	2 m cable	∅ 8 x 42 mm	w054	d349

## M12 – Output 0...10 V and 0...20 mA



<b>General data</b>			
<b>Operating voltage</b>	15...30 VDC	<b>Housing material</b>	CuZn-Cr
<b>Repeatability</b>	1 % of measuring range  A - B		

### Types and data – selection table

Type	Linearity deviation	Measuring range	Connection	Switching distance	Ambient temperature	Dimensions	w	d
BI4-M12-LIU-H1141	5 % of full scale	0.5...3 mm	male, M12 x 1		-25 °C	Ø 12 x 62 mm	w053	d350
BI4-M12-LIU	5 % of full scale	0.5...3 mm	2 m cable		-25 °C	Ø 12 x 64 mm	w052	d351
BI2-M12-LIU-H1141	3 % of full scale	1...2.5 mm	male, M12 x 1		-25...+70 °C	Ø 12 x 62 mm	w053	d350
BI2-M12-LIU	3 % of full scale	1...2.5 mm	2 m cable		-25...+70 °C	Ø 12 x 64 mm	w052	d351
NI5-M12-LIU-H1141	5 % of full scale	0.5...4 mm	male, M12 x 1		-25...+70 °C	Ø 12 x 62 mm	w053	d352
NI5-M12-LIU	5 % of full scale	0.5...4 mm	2 m cable		-25...+70 °C	Ø 12 x 64 mm	w052	d353

## M18 – Output 0...10 V and 0...20 mA



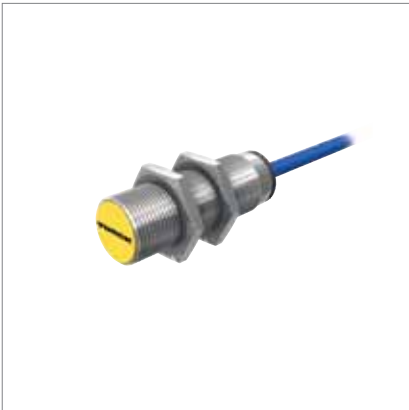
<b>General data</b>			
<b>Operating voltage</b>	15...30 VDC	<b>Housing material</b>	CuZn-Cr
<b>Repeatability</b>	1 % of measuring range  A - B		

### Types and data – selection table

Type	Linearity deviation	Measuring range	Connection	Switching distance	Ambient temperature	Dimensions	w	d
BI8-M18E-LIU-H1141	5 % of full scale	1...5 mm	male, M12 x 1		-25 °C	Ø 18 x 72 mm	w053	d354
BI8-M18-LIU	5 % of full scale	1...5 mm	2 m cable		-25 °C	Ø 18 x 64 mm	w052	d236
BI5-M18E-LIU-H1141	3 % of full scale	2...4 mm	male, M12 x 1		-25...+70 °C	Ø 18 x 72 mm	w053	d354
BI5-M18-LIU	3 % of full scale	2...4 mm	2 m cable		-25...+70 °C	Ø 18 x 64 mm	w052	d236
NI10-M18E-LIU-H1141	5 % of full scale	1...7 mm	male, M12 x 1		-25...+70 °C	Ø 18 x 72 mm	w053	d355
NI10-M18-LIU	5 % of full scale	1...7 mm	2 m cable		-25...+70 °C	Ø 18 x 64 mm	w052	d356



## M18 – Current output 4...20 mA – Intrinsically safe



**General data**

<b>Linearity deviation</b>	5 % of full scale
<b>Connection</b>	2 m cable
<b>Switching distance</b>	
<b>Ambient temperature</b>	-25 °C
<b>Repeatability</b>	1 % of measuring range  A - B

<b>Measuring range</b>	1...5 mm
<b>Operating voltage</b>	14...30 VDC
<b>Housing material</b>	CuZn-Cr
<b>Dimensions</b>	Ø 18 x 64 mm

### Types and data – selection table

**Type**

BI8-M18-LI-EXI



w056 d236

## M18 – Voltage output 0...10 V and 3-wire PNP



**General data**

<b>Linearity deviation</b>	5 % of full scale
<b>Operating voltage</b>	15...30 VDC
<b>Housing material</b>	CuZn-Cr
<b>Dimensions</b>	Ø 18 x 54 mm
<b>Measuring range</b>	1...5 mm

<b>Connection</b>	2 m cable
<b>Switching distance</b>	
<b>Ambient temperature</b>	-25...+70 °C
<b>Repeatability</b>	1 % of measuring range  A - B

### Types and data – selection table

**Type**

BI8-M18-LUAP6X



w057 d357

## M18 – Inductive linear position sensor – Output 0...10 V and 0...20 mA



### General data

<b>Connection</b>	2 m cable	<b>Operating voltage</b>	15...30 VDC
<b>Switching distance</b>		<b>Housing material</b>	CuZn-Cr
<b>Ambient temperature</b>	-25...+70 °C	<b>Repeatability</b>	1 % of measuring range  A - B

Actuation via short-circuiting ring (included in delivery), blind hole or similar

### Types and data – selection table

Type	Linearity deviation	Measuring range	Dimensions		
WI70-M18-LIU5	3 % of full scale	0...70 mm	Ø 18 x 139 mm	w052	d358
WI40-M18-LIU5	2 % of full scale	0...40 mm	Ø 18 x 107.5 mm	w052	d359

## M30 – Output 0...10 V and 0...20 mA



### General data

<b>Operating voltage</b>	15...30 VDC	<b>Switching distance</b>	
<b>Housing material</b>	CuZn-Cr	<b>Repeatability</b>	1 % of measuring range  A - B

### Types and data – selection table

Type	Linearity deviation	Measuring range	Connection	Ambient temperature	Dimensions		
BI15-M30E-LIU-H1141	5 % of full scale	2...10 mm	male, M12 x 1	-25 °C	Ø 30 x 77 mm	w053	d360
BI15-M30-LIU	5 % of full scale	2...10 mm	2 m cable	-25 °C	Ø 30 x 64 mm	w052	d259
BI10-M30E-LIU-H1141	3 % of full scale	3...8 mm	male, M12 x 1	-25...+70 °C	Ø 30 x 77 mm	w053	d360
BI10-M30-LIU	3 % of full scale	3...8 mm	2 m cable	-25...+70 °C	Ø 30 x 64 mm	w052	d259

### M30 – Voltage output 4...20 mA – Intrinsically safe



**General data**

<b>Linearity deviation</b>	5 % of full scale
<b>Connection</b>	2 m cable
<b>Switching distance</b>	
<b>Ambient temperature</b>	-25 °C
<b>Repeatability</b>	1 % of measuring range  A - B

<b>Measuring range</b>	2...10 mm
<b>Operating voltage</b>	14...30 VDC
<b>Housing material</b>	CuZn-Cr
<b>Dimensions</b>	Ø 30 x 64 mm

**Types and data – selection table**

**Type**

BI15-M30-LI-EXI



w056 d259

### M30 – Voltage output 0...10 V and 3-wire PNP



**General data**

<b>Linearity deviation</b>	5 % of full scale
<b>Operating voltage</b>	15...30 VDC
<b>Housing material</b>	CuZn-Cr
<b>Dimensions</b>	Ø 30 x 64 mm

<b>Measuring range</b>	2...10 mm
<b>Connection</b>	2 m cable
<b>Switching distance</b>	
<b>Ambient temperature</b>	-25...+70 °C
<b>Repeatability</b>	1 % of measuring range  A - B

**Types and data – selection table**

**Type**


BI15-M30-LUAP6X



w057 d361

## Ø 4 mm – Output 0...10 V and 0...20 mA




<b>General data</b>		<b>Connection</b>	0.3 m male, M12 x 1
<b>Measuring range</b>	0.1...1.5 mm	<b>Switching distance</b>	
<b>Operating voltage</b>	15...30 VDC	<b>Ambient temperature</b>	-25...+70 °C
<b>Housing material</b>	V4A (1.4404)	<b>Repeatability</b>	1 % of measuring range  A - B
<b>Dimensions</b>	Ø 4 x 30 mm		

### Types and data – selection table

Type		
BI1,5-EH04-0,3-M12-SIU-H1141	w053	d362

## Ø 6.5 mm – Voltage output 0...10 V



<b>General data</b>		<b>Measuring range</b>	0.25...1.25 mm
<b>Linearity deviation</b>	3 % of full scale	<b>Operating voltage</b>	15...30 VDC
<b>Connection</b>	2 m cable	<b>Housing material</b>	V2A (1.4301)
<b>Switching distance</b>		<b>Dimensions</b>	Ø 6.5 x 42 mm
<b>Ambient temperature</b>	-25...+70 °C		
<b>Repeatability</b>	1 % of measuring range  A - B		

### Types and data – selection table

Type		
BI1,5-EH6,5-LU	w054	d363